Summary of subgroup results for Total Column Ozone and Tropospheric Ozone

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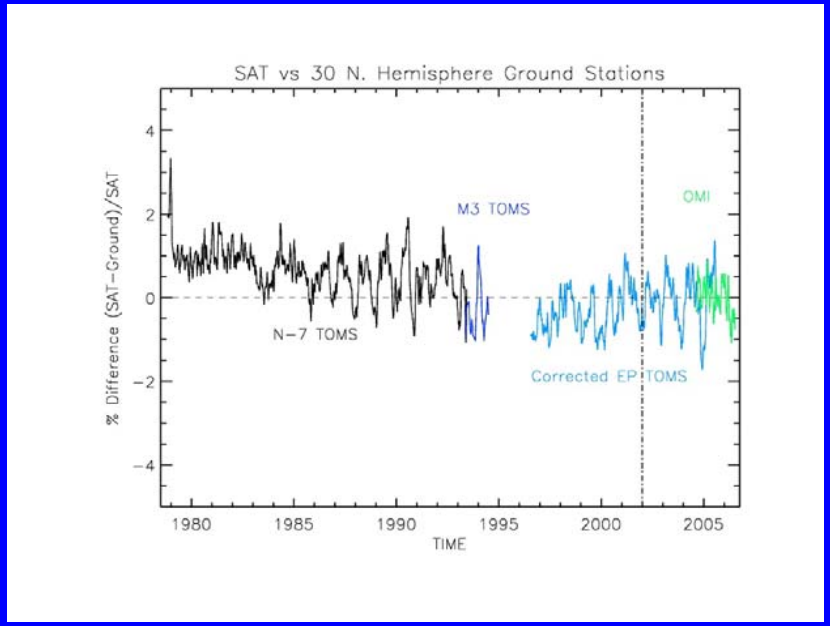
6 talks on total column ozone comparisons
5 talks on tropospheric ozone comparisons
results from SAUNA campaign in Sodankyla
NATIVE results during INTEX-B
cloud pressure retrievals from OMI

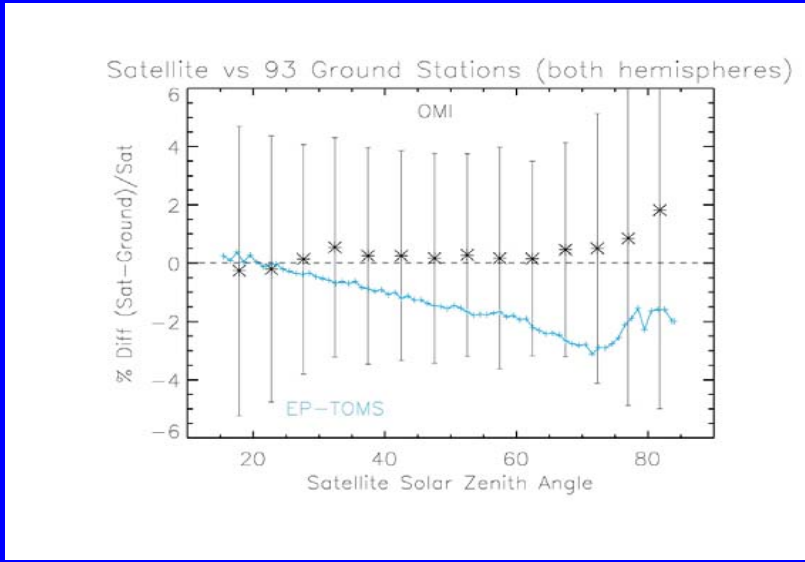
OMI – status of total ozone algorithms

- OMI – TOMS v8 algorithm (Bhartia)
  - globally, OMTO3 accuracy ~2% rms accuracy
  - aerosol correction good
  - cloud height uncertainty significant source of error
  - errors of up to 10% do occur, typically for very bright, low clouds
  - accuracy at SZA>80˚ unknown since nothing is currently available to validate them
- OMI – DOAS algorithm v1.0.1 (Veefkind)
  - fixed Solar Irradiance reduces striping
  - cloud fraction is computed internally
  - improved cloud pressure information from OMCLDO2

OMI total column ozone

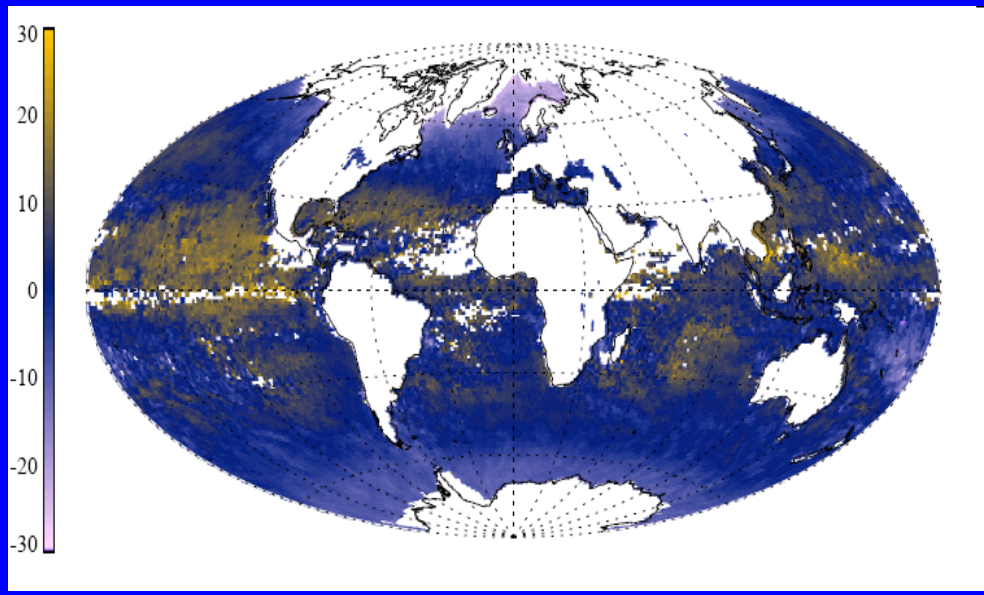
- OMI TO3 validation (Labow)
  - agrees with data from an ensemble of 76 northern hemisphere ground-stations to within 1%
  - OMI consistent with previous instruments
  - agreement with N-16 SBUV/2 also good
  - no zenith angle dependence in OMTO3



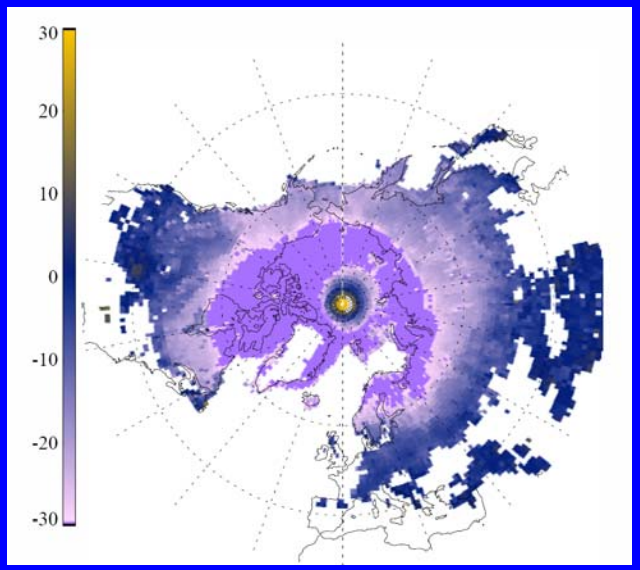


OMI total column ozone (*cont.*)

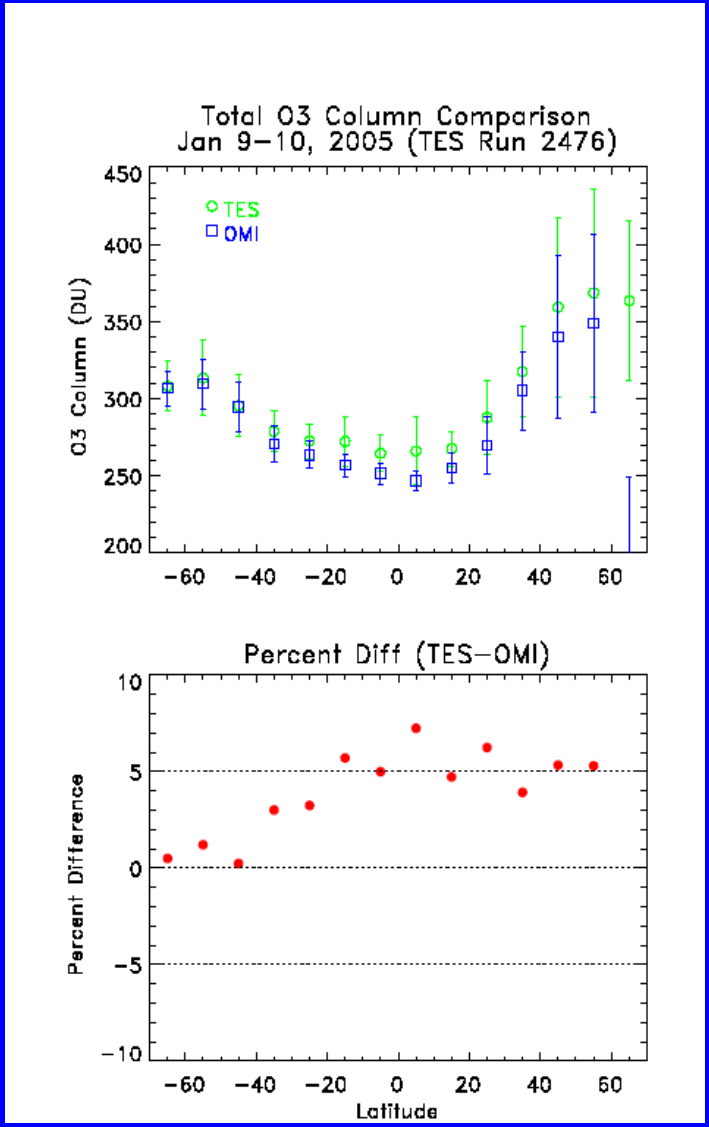
- OMI DOAS product (Brinksma, Balis)
  - the average difference between OMIDOAO3-v1.01 and Brewer observations is 1.6±4.4%
  - there is a residual solar zenith angle dependence



- OMI TO3 vs DOAS differences
  - related to cloud height
  - related to snow / ice treatment

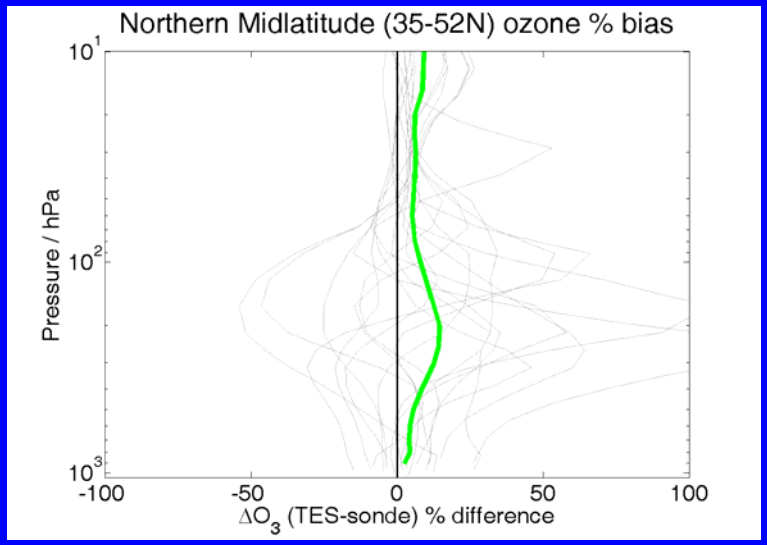


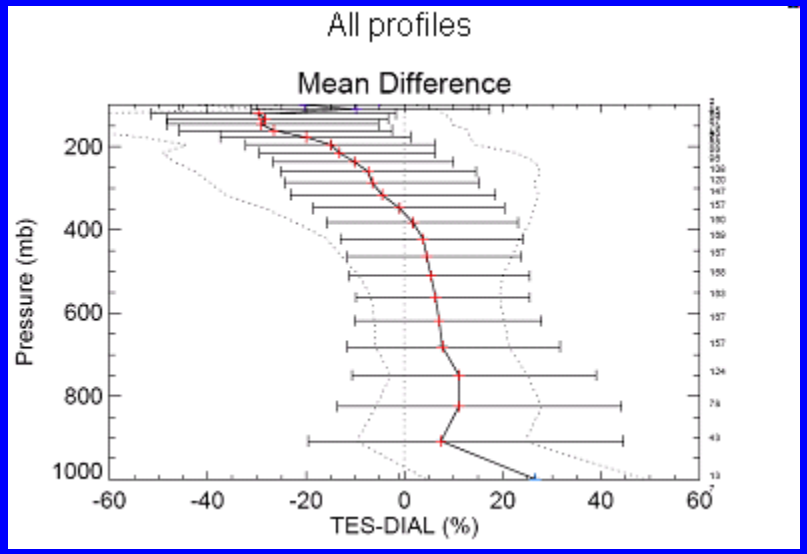
TES total column ozone



- TES v002 compared with OMI and SBUV (Osterman)
  - TES is higher than OMI at most latitudes
  - percent differences less than 3% between 70°S and 20°S (often better)
  - differences 3-7% between 10°S and 60°N
  - TES v003 data products will include a tropospheric column

TES tropospheric ozone comparisons

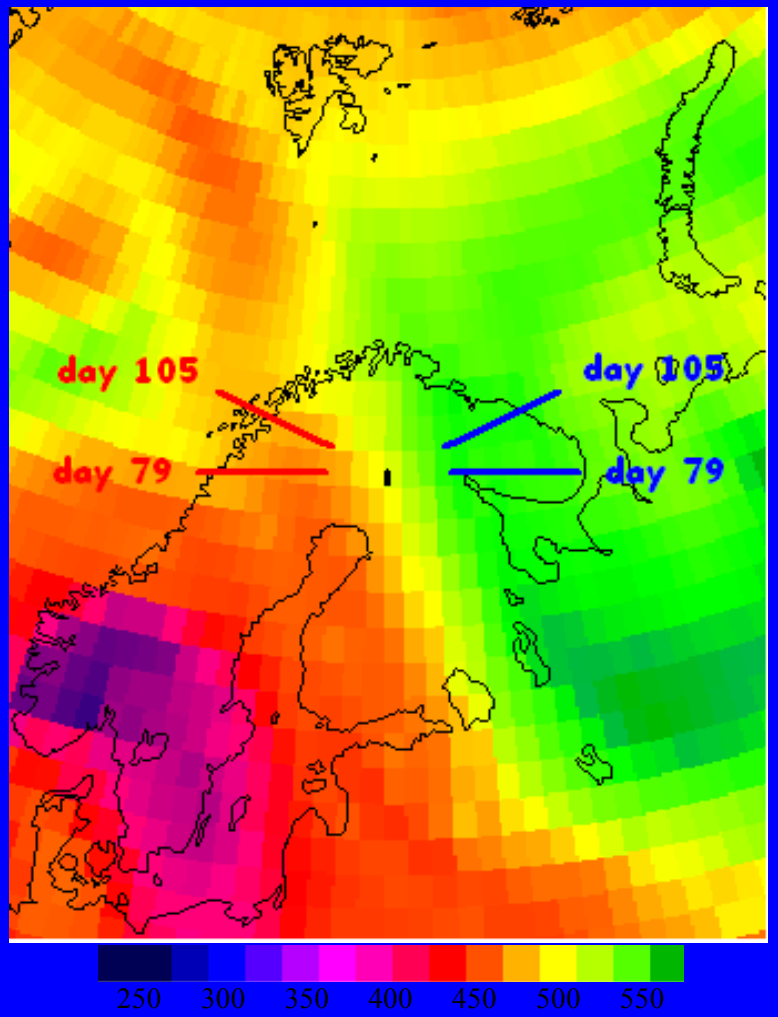




- TES profiles compared with sondes (Worden, Nassar), and airborne lidar (Richards)
  - TES nadir ozone profiles are typically biased high in all three latitude zones
  - mean positive bias of less then 10% in the lower and mid-troposphere.
  - bias is negative in the upper troposphere and increases to up to 30%.

- SAUNA high lat / high ozone results (Bojkov)
  - single Brewer stray light error documented
  - under high gradient conditions differences depend on look direction

- Cloud pressure retrievals (Joiner)
  - non-Lambertian behavior produces erroneously low cloud pressures
  - multiple cloud decks produce difference wrt IR, pressures closer to lower cloud deck.



Validation needs

- OMI validation
  - better cloud height
    - cirrus
    - multi-deck clouds
  - very high SZA ozone (>80°)
- TES validation
  - essential to maintain sonde data record
  - sonde launch coincident with close TES overpass needed
  - more sonde data needed in sub-tropics